



CITES Cheetah Trade Resource Kit

Identification Guides

This section has detailed identification guides for both live cheetahs and cheetah specimens.

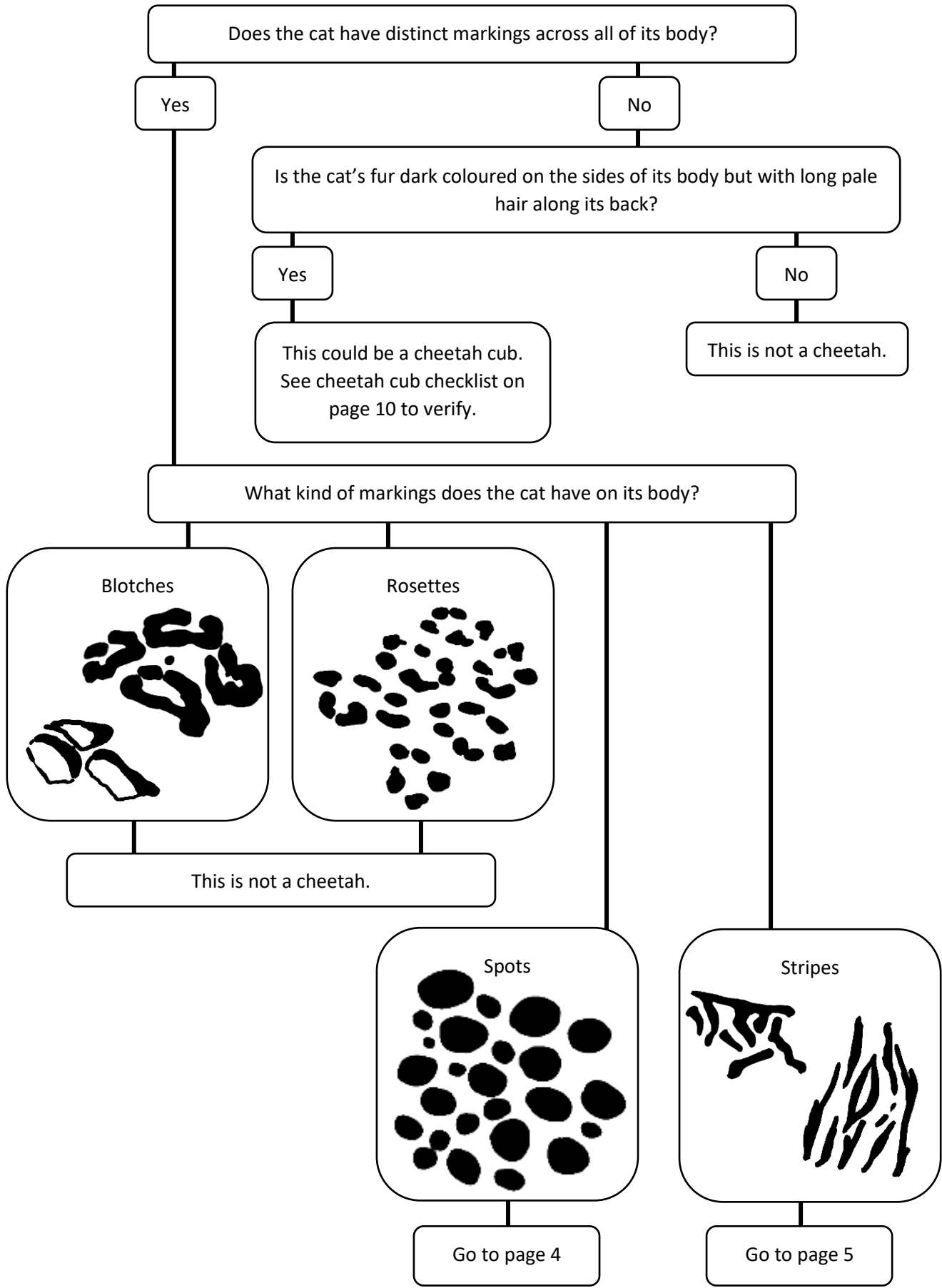
These include identification keys and distinctive features of the species as well as comparisons with other cat species and specimens which could be confused with cheetahs.

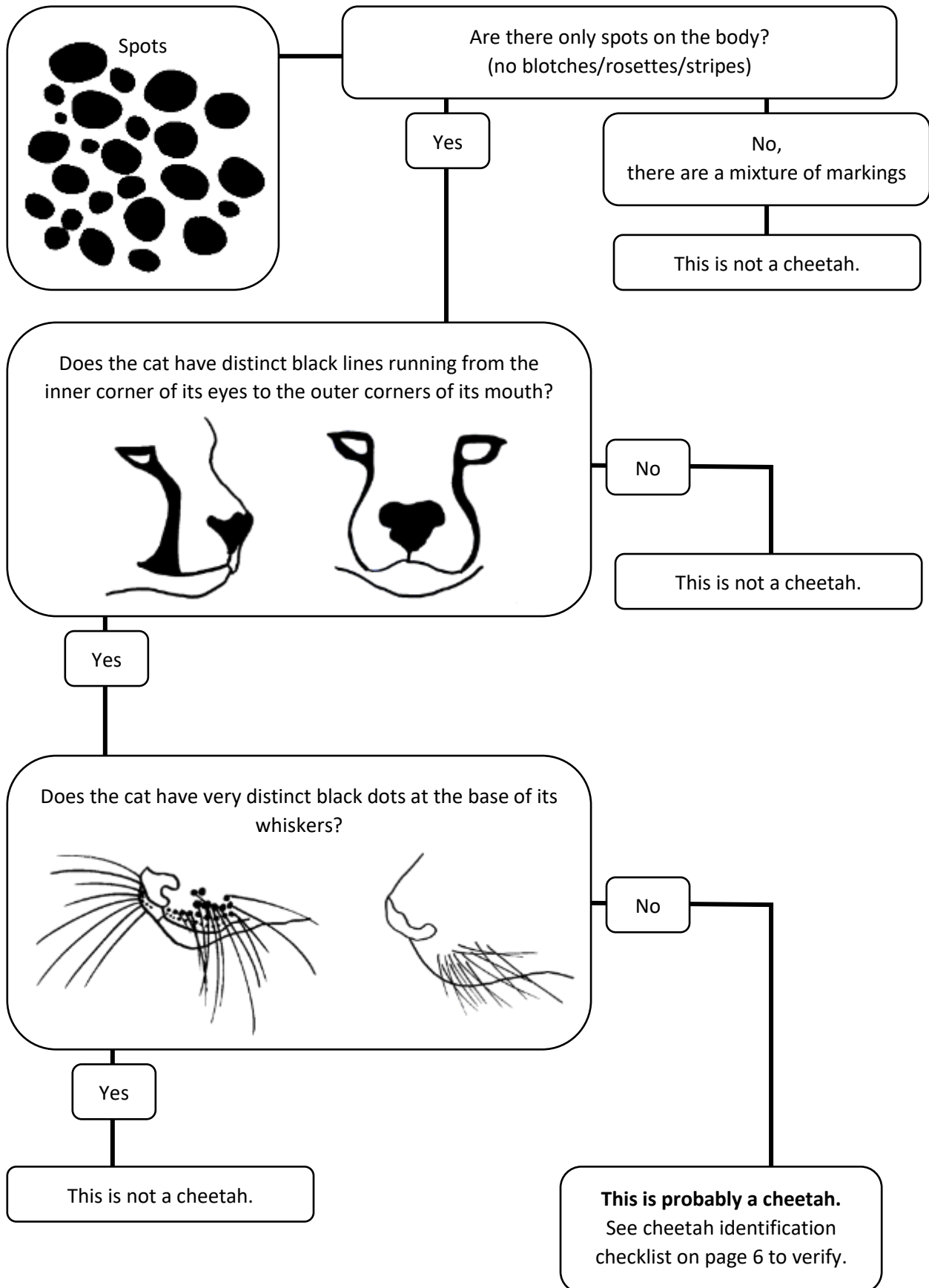
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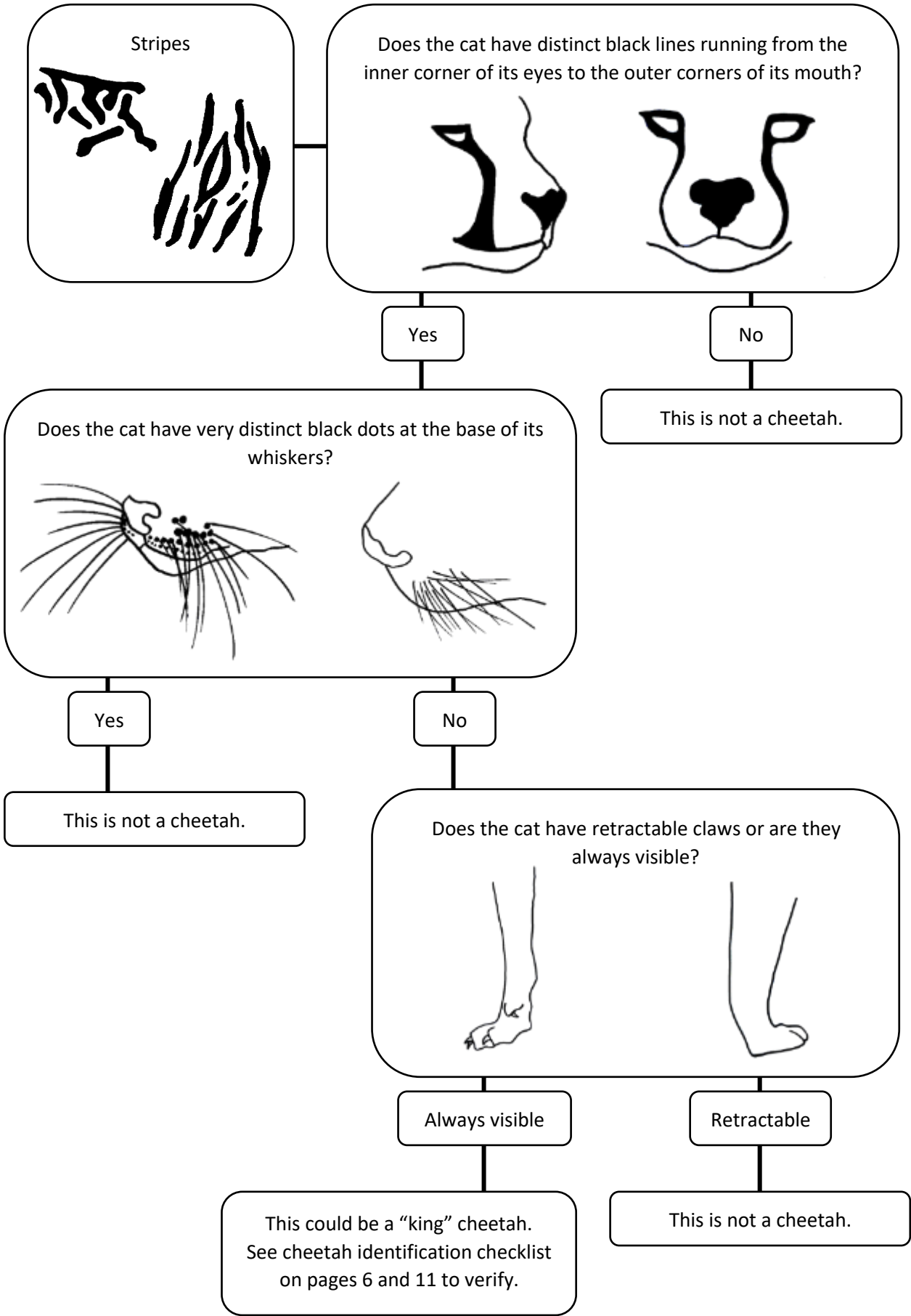
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All photographs marked NHMUK feature specimens from the collections of the Natural History Museum, London

1. Whole Animal Identification Key







2. Cheetah Identification Checklist

2.1. *Head and Face*

See Section 3.1 on page 7 for more information

- Relatively small, rounded head
- Short muzzle
- Black nose tip
- Black “teardrop” mark running from eye to side of the mouth
- White chin with no/few spots
- Rounded ears
- Base of back of the ears is black
- No white spot on back of ears
- Amber/orange coloured eyes
- Eyes have round black pupils

2.2. *Body, Limbs and Tail*

See Section 3.2 on page 8 for more information

- Tawny yellow fur
- Individual small black spots
- Spots across all of body, including legs and tail (except end of tail where spots merge into stripes)
- Whitish belly
- Fur is often coarse and short
- Claws are visible and cannot be fully retracted into the pad

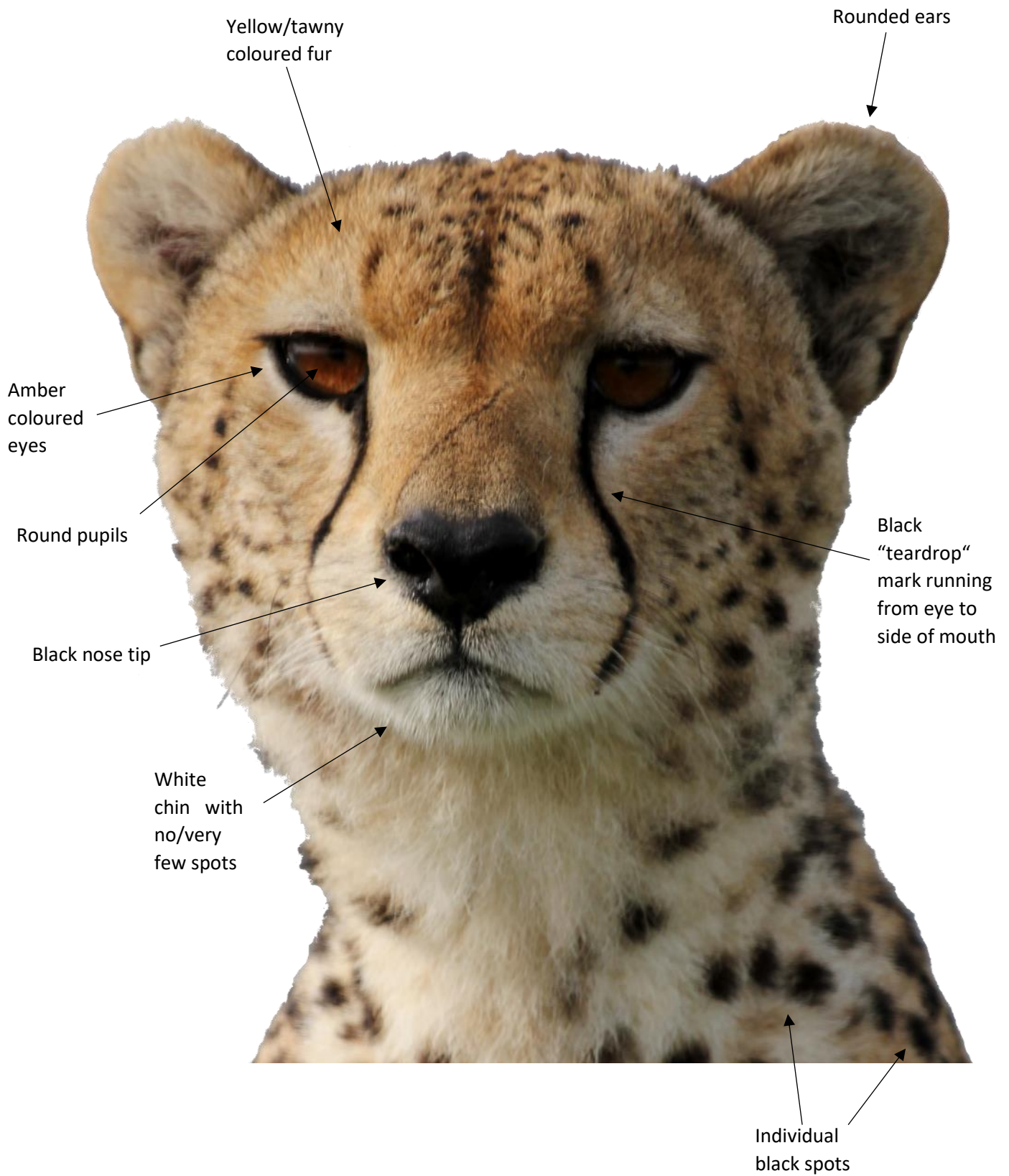
2.3. *Tail*

See Section 3.2 on page 8 for more information

- Long tail (approximately as long as the animal’s height at shoulder)
- Usually several black and white bands at the end
- Tail tip usually (but not always) white

3. Distinctive Features of Cheetahs

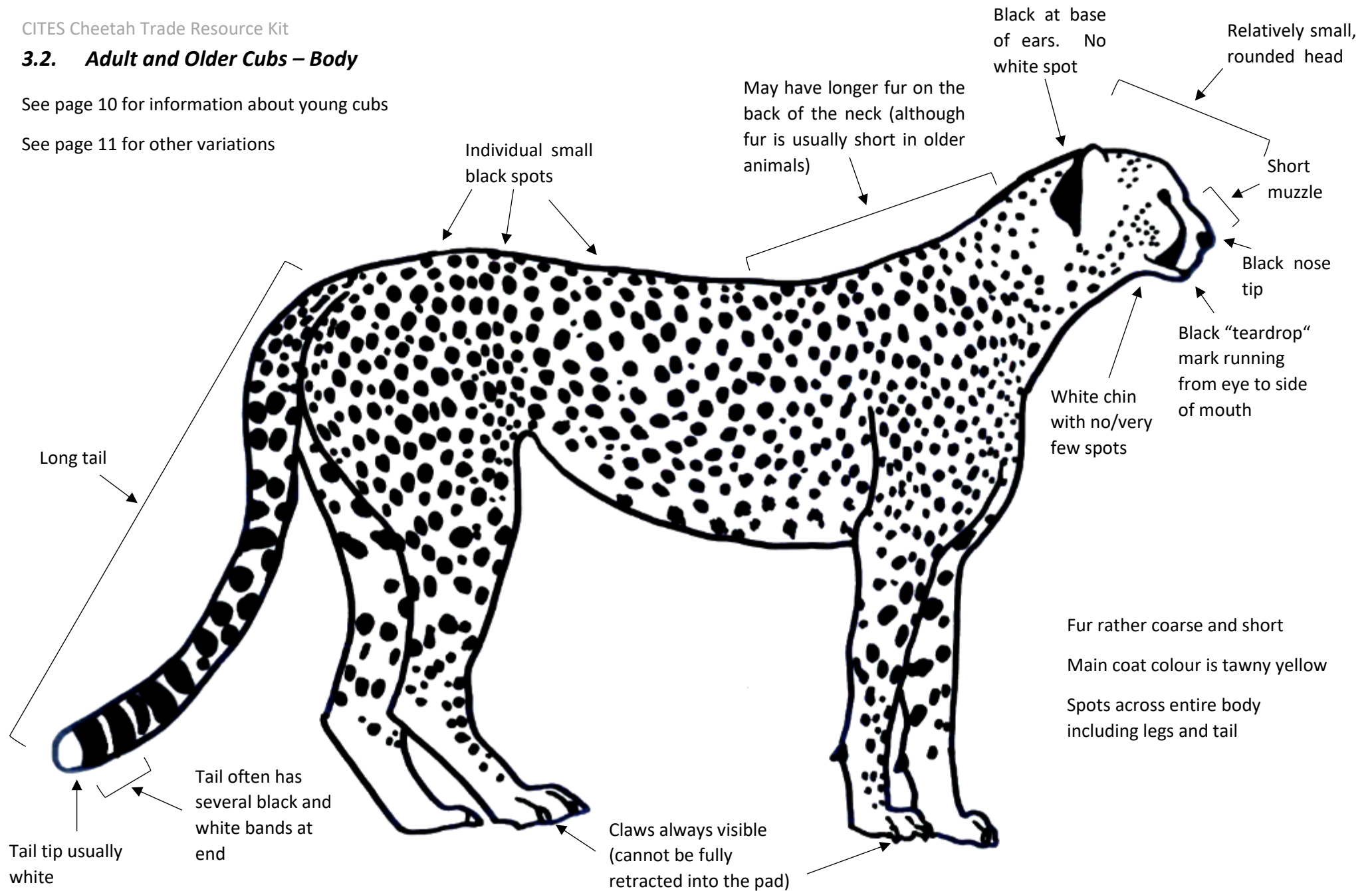
3.1. Face



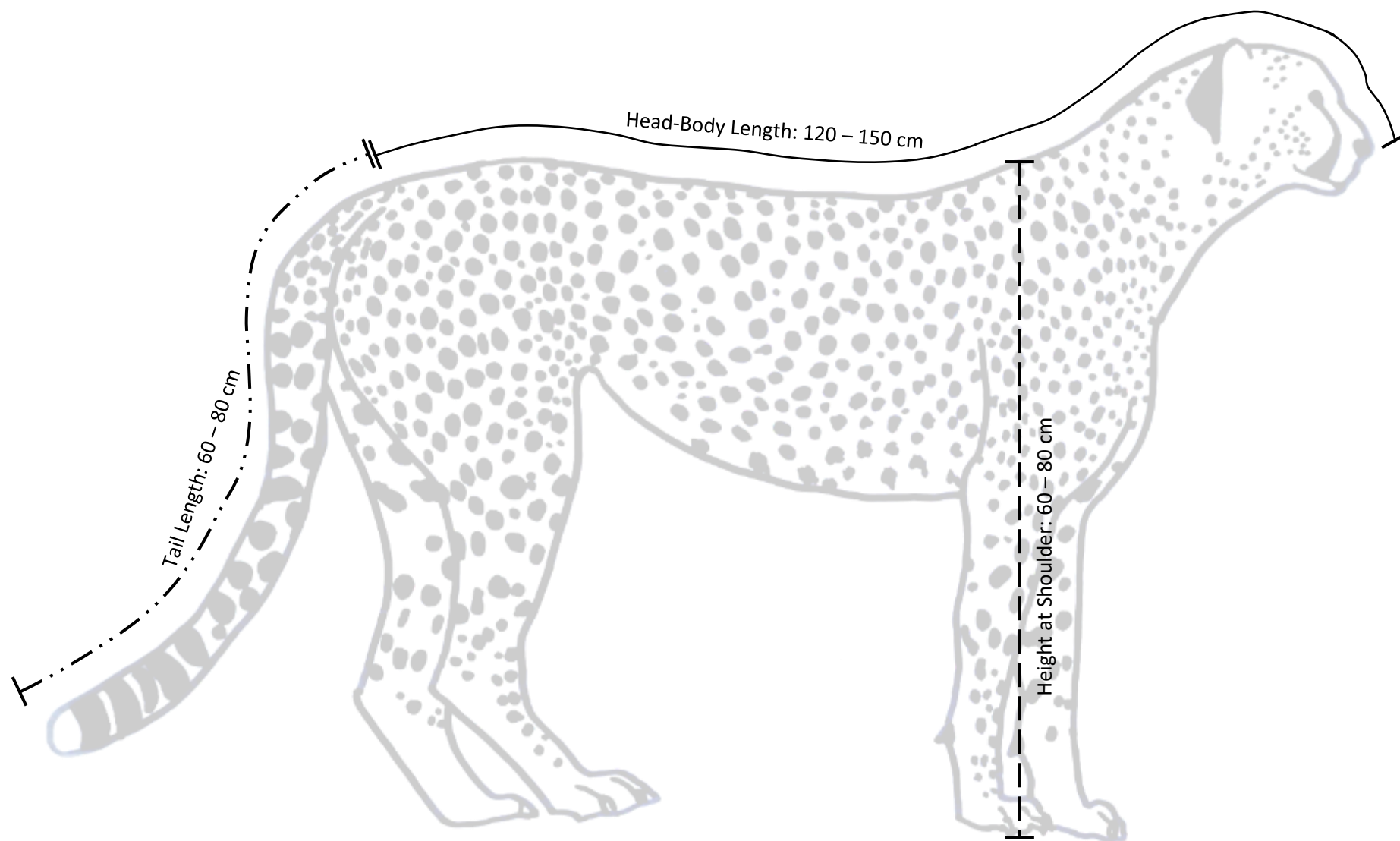
3.2. Adult and Older Cubs – Body

See page 10 for information about young cubs

See page 11 for other variations



3.3. Adult Body Measurements

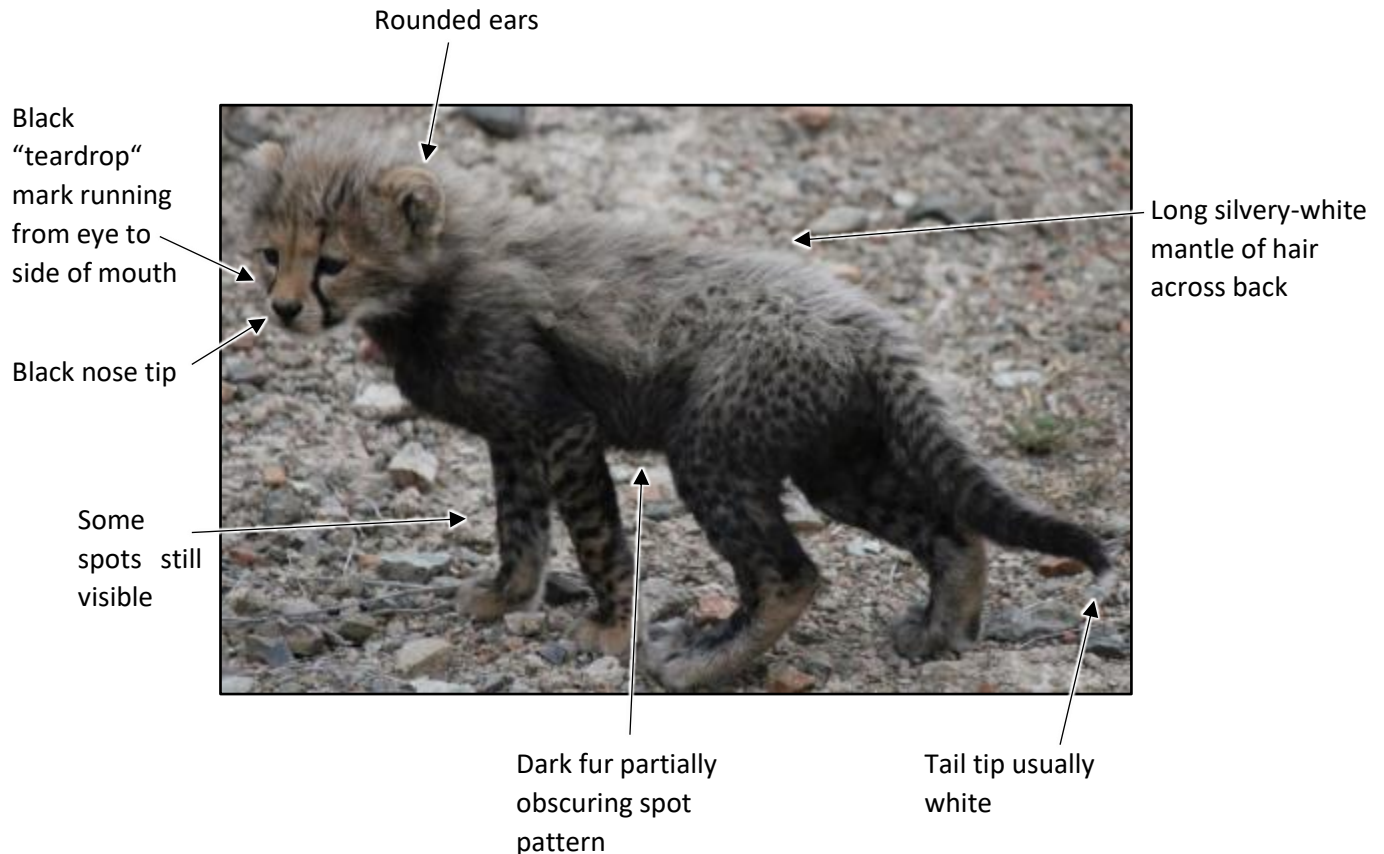


3.4. Cheetah Cubs

Young cubs (less than 4 months old) look quite different to adult cheetahs. Their bodies are covered by dark fur which makes their spot patterns difficult to see. They also have long silvery-white hair along their backs.

These characteristics start to disappear when the cub is between 3-4 months old after which the cub will begin to resemble a small adult cheetah (see cub ageing guidelines).

However, even when they are very young, cubs still have many of distinctive cheetah characteristics, such as the “teardrop” mark on the face, non-retractable claws and black nose tip.



3.5. *“King” Cheetah*

Some cheetahs have a rare genetic mutation which affects the patterns on their fur. These cheetahs (often called “king” cheetahs) have spots which are merged together to form stripes and/or blotches.

Only the fur pattern is affected, other aspects of their appearance remain the same as other cheetahs.

The distinctive markings of the king cheetah are the result of a single gene mutation which can occur in both males and females.





3.6. *Melanism (entirely black/dark fur)*

Individuals of some cat species have genetic mutations which mean they over-produce the dark colour pigments in their fur, making them look much darker (or even entirely black) than usual for their species.




Melanism is extremely rare in cheetahs (there have only been two confirmed cases) and so if an entirely black cat is found it is unlikely to be a cheetah.


4. Cheetah Cub Ageing Guidelines

Age class	Age	Teeth	Approx normal weight ¹	Approx head-body length	Approx height at shoulder	General appearance notes	Photos
Newborn 0 – 2 weeks	Birth	No teeth visible	300 - 400g			Eyes closed. Dark hair on lower half of body with no obvious pattern. Long silvery white mantle of fur running along back.	
	1 week	No teeth visible	400 - 500g			Eyes open at 7-10 days. Dark hair on lower half of body with no obvious pattern. Long, silvery white fur running along back.	
Very young cub 2 – 8 weeks	2 weeks	Teeth beginning to erupt	500g-1kg			Dark hair on lower half of body. Long silvery white fur running along back. Beginning to walk	
	1 month	28-30 days: front teeth (canines & incisors) begin to be visible	1.25 – 2 kg		15-20cm	6 – 7 weeks: Yellow hair and black spots becoming visible on the legs.	




¹ Note that these are normal weight ranges – animals in poor condition may be significantly under weight

Young cub 2 – 6 months	2 months	45-50 days: back teeth (premolars & molars) become visible	2 – 3.5 kg	15-25cm	Beginning to lose dark hair from lower half of body. Tawny yellow fur and black spots becoming more visible.	
	3 months	All teeth visible	3.5 – 6 kg	20-30cm	Most dark fur gone. Tawny yellow fur and black spot pattern visible across body. Beginning to lose mantle of pale fur along back	
	4 months		6.5 – 10 kg	30-50cm	Tawny yellow fur with black spot pattern fully visible across body. Most of mantle of pale fur along back gone.	

Large cub 6 – 12 months	6 months		9 – 13 kg	40-60cm	Longer fur remains on back of neck. Coat across body remains quite long and fluffy. Lanky appearance. Male cubs beginning to be slightly larger than females.	
	7 months	Begin to lose first teeth	11 – 16 kg		Longer fur on back of neck. Coat across body remains quite long and fluffy. Lanky appearance. Male cubs beginning to be slightly larger than females.	
	8 months	Adult teeth begin to appear	>15 kg	45 – 65cm	Longer fur on back of neck. Coat across body remains quite long and fluffy. Lanky appearance. Male cubs slightly larger than females.	
	10 months	Last adult molars erupt			Longer fur on back of neck. Coat across body remains quite long and fluffy. Lanky appearance. Male cubs slightly larger than females.	
	12 months		<30kg	50-70cm	Some longer fur on back of neck. Coat across body remains quite long and fluffy. Male cubs slightly larger than females.	

Young adolescent 12 – 18 months	Teeth are white and in good condition	25-35kg	60-80cm	<p>Reaching full adult height (at shoulder) at approx. 14 months.</p> <p>Some longer fur on back of neck.</p> <p>Coat across body can be quite long and fluffy, particularly on belly and shoulders.</p> <p>Lanky appearance, not fully muscled (particularly noticeable across back end and around neck)</p> <p>Male cubs slightly larger than females.</p> <p>‘Cub like’ face.</p>	
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5. Adult Cheetah Ageing Guidelines

Age class	Teeth	Approx weight	Approx head-body length	Approx height at shoulder	General appearance notes	Photos
Old adolescent 18 – 24 months	No tartar or yellowing.	28-45kg	120-150cm	60-80cm	Some longer fur on back of neck. Coat increasingly sleek and smooth. Muscle tone developing. Males slightly larger than females.	
Young adult 2 - 4 years	Slight tartar and yellowing.	28-65kg	120-150cm	60-80cm	Usually a slight mane – tawny yellow fur usually longer than black fur. Fully muscled. Males larger than females	
Adult 4+ years	Tartar and yellowing, slight gum recession and gingivitis	28-65kg	120-150cm	60-80cm	Hair on back of neck not noticeably longer than rest of body. Fully muscled. Males larger than females Some scars, particularly on males.	

6. Normal Early Life Stages of Wild Cheetahs

Age	Description
Birth to 6-8 weeks	Litter of 1-8 cubs; usually 2-6 cubs. Cashed in den by mother, who returns regularly to nurse the cubs
6-8 weeks	Leave den, follows mother. Beginning to eat solid food but still reliant on milk from mother
4-5 months	Weaned
12-18 months	Splits from mother. Remains together with littermates in adolescent group. May join up with unrelated adolescents at this time.
18-24 months	Females reach sexual maturity. Adolescent group split apart: females become solitary; males remain together and form coalition. Males may continue to join up with other males.

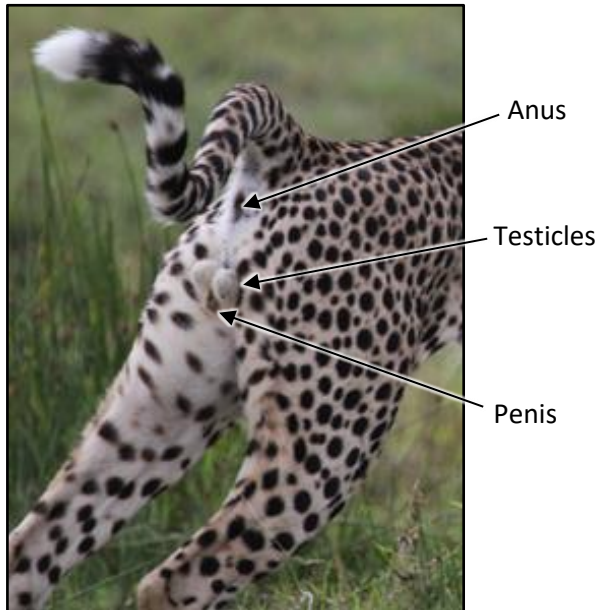
7. Determining the Sex of a Cheetah

Cheetahs do not have high levels of sexual dimorphism – males are usually larger than females but there is a lot of overlap between the two sexes and it is impossible to reliably tell them apart without looking at their genitals.

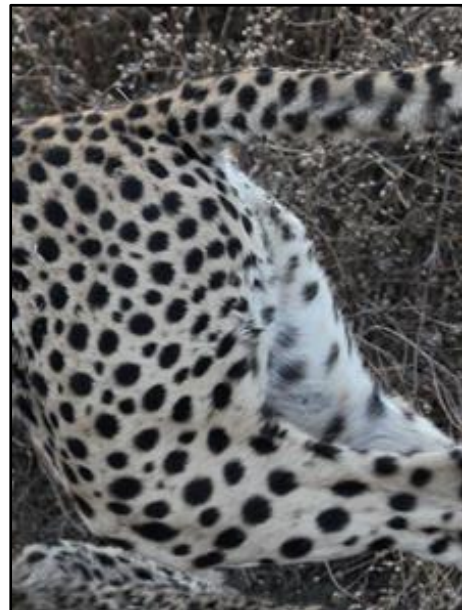
Males have external genitalia which are clearly visible below their tails and anus. They have two testicles with their penis located just below.

Female cheetahs' vulvas are visible, located below their tail and anus, however the vulva is much less noticeable than the males' testicles and penis.

Male

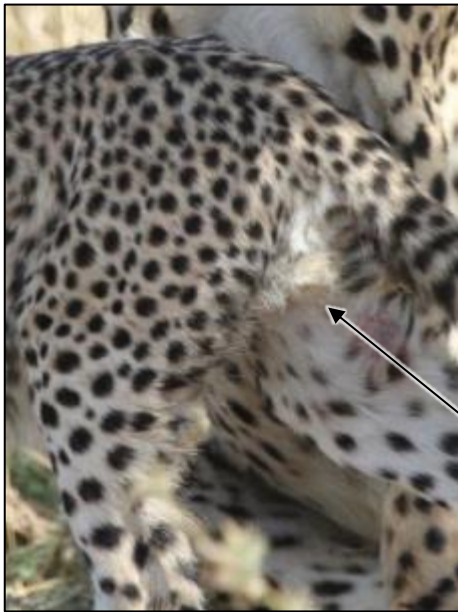


Female



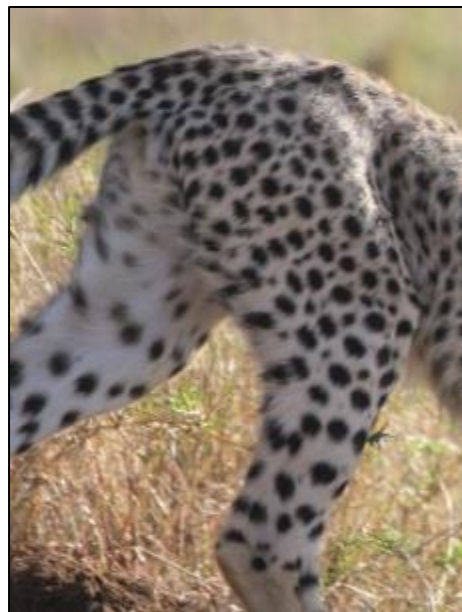
Cubs can be sexed from birth however their sex can be more difficult to determine than adults due to their longer fur and smaller genitals.

Male



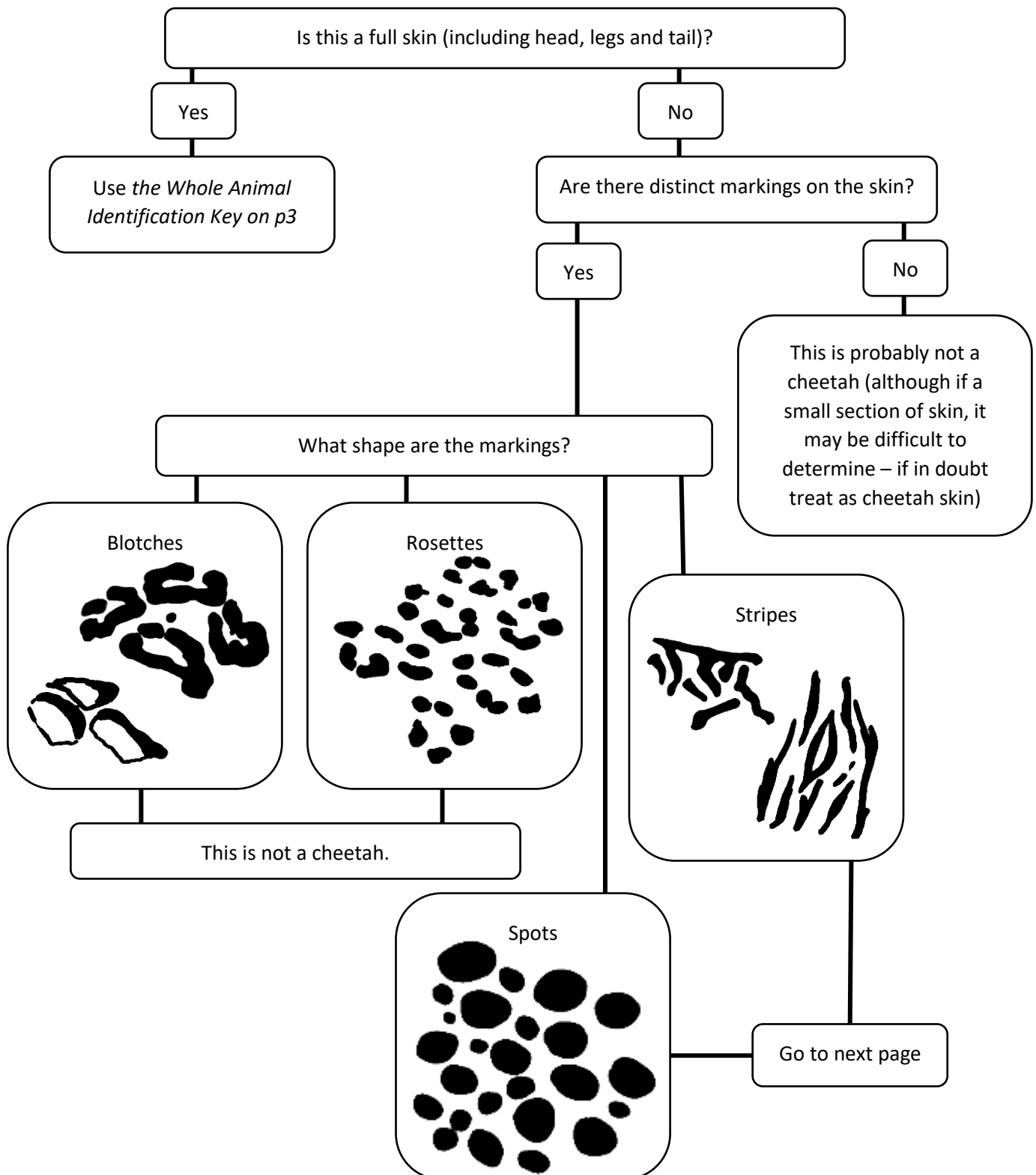
Testicles

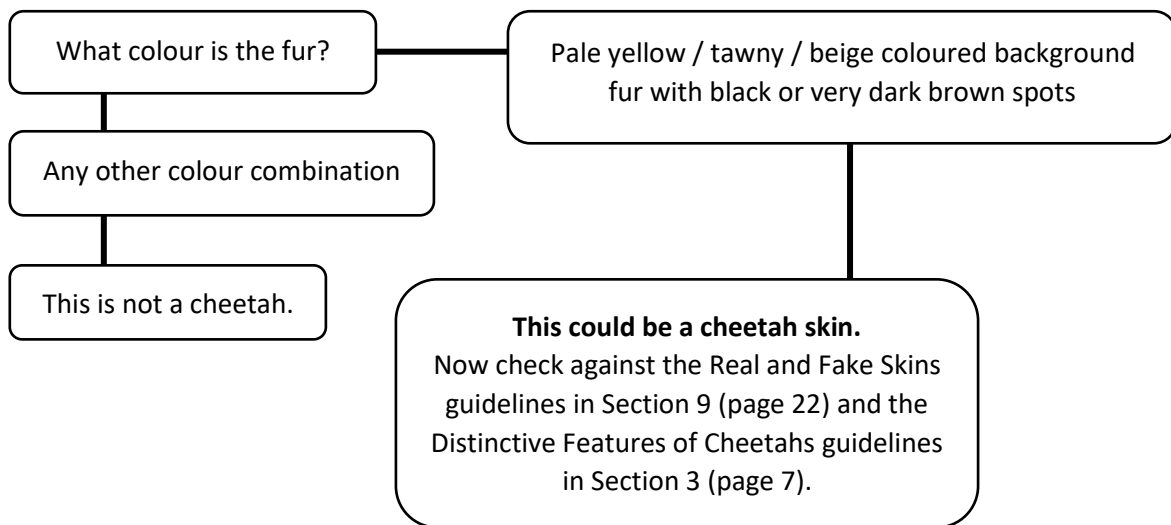
Female



8. Cheetah Skins Identification

Note: Where a specimen has been seized and is suspected of being from a cheetah, DNA samples should be taken. These tissue and hair samples can be used for analysis to confirm the species and to help trace its origin. Please follow the DNA sampling protocols given in the *DNA Sampling Guidelines*.





9. Real and Fake Skins

Sometimes furs that look like they come from a threatened species, such as the cheetah, are not in fact real cheetah skins. Sometimes fur is manufactured, or the skins of other animals are modified, to look like cheetah fur. To tell real skins from fake skins, use the guidelines below.

Note: Where a specimen has been seized and is suspected of being from a cheetah, DNA samples should be taken. These tissue and hair samples can be used for analysis to confirm the species and to trace its origin. Please follow the DNA sampling protocols given in the DNA Sampling Guidelines

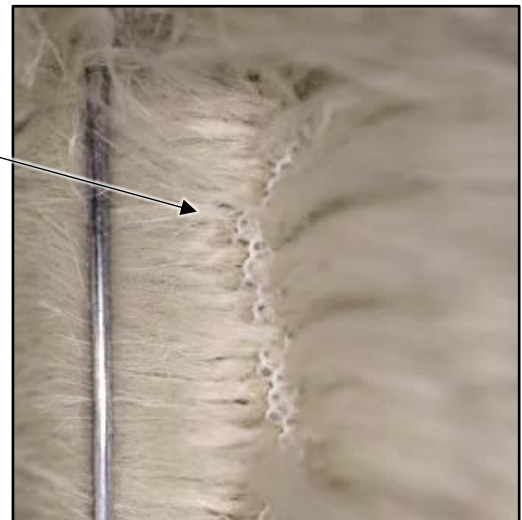
9.1. Is it a Real Animal Skin?

1. Look at the base of the hair shafts. Real animal fur will be backed by leather/skin, with fake fur it is often possible to see the webbed backing material.



Webbed thread backing visible at base of hairs

Leather/skin visible at base of hairs



If the fur is too thick to see the base of the shafts properly, turn the specimen over and look at the back. The back of a real skin will look like leather or suede, the back of fake fur will look like webbed threads.

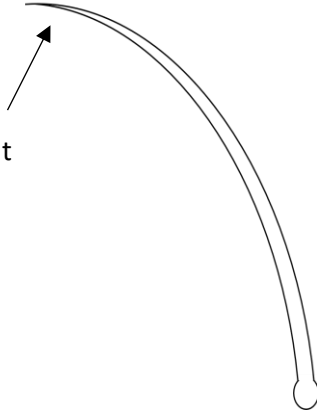
Real skins are also more likely to have imperfections, for example holes.



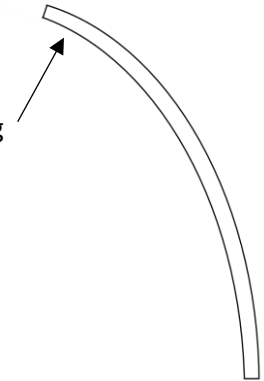
2. Look at the hair shafts themselves. Real hair will normally taper to a thin point towards the end (assuming it has not been cut or sheared). Fake fur often is the same width along its entire length. A magnifying glass, if one is available, will help you in this examination.

Real fur

Tapers to a
thin point at
end

**Fake fur**

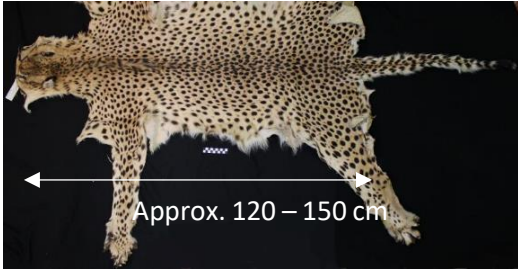
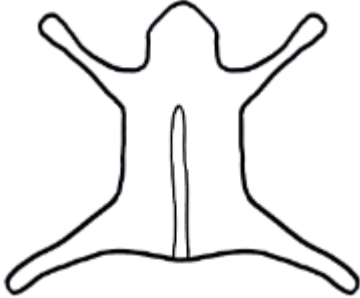


Same width along
entire length


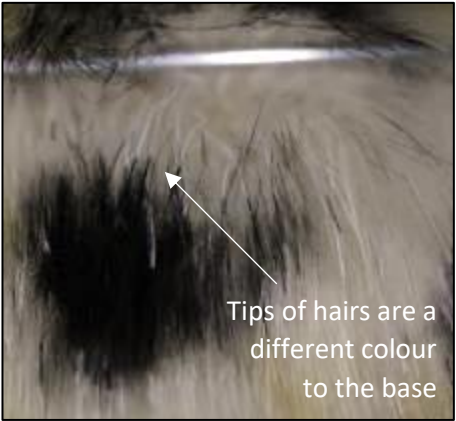
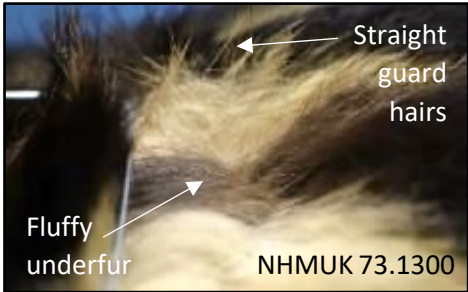



3. Remove a small sample of the hair from the specimen and move it to a heat and fire-proof surface. Use a match to singe the hair. Real hair will shrivel and smell similarly to burnt human hair. Fake fur is often made from a type of plastic and so will melt rather than singe. Smell the burnt fur once it has finished burning and determine if it smells like burnt plastic.

9.2. Is it a Real Cheetah Skin?

Important signs to look for:

	Signs of a Real Cheetah Skin	Signs of a Possible Fake Skin
Overall Shape	<p>Cheetahs have long bodies and long legs. A full skin from an adult cheetah will be between 120 and 150cm in length from nose to the base of the tail (see page 9 for adult cheetah body measurements).</p> 	<p>Skin is smaller than an adult cheetah, but has the appearance of an adult cheetah not a cub e.g. no silver-white mantle of hair, darker fur or long hairs as seen on cheetah cubs (see page 10 for more information about cheetah cubs and page 30 for more information about cheetah cub skins).</p>
Tail Shape	<p>Cheetahs have long tails, usually 60 - 80 cm long or approximately half the head-body length (see page 9 for adult cheetah body measurements).</p> 	<p>Short tail. May look more similar to a goat or dog tail (it may be a modified skin from one of these animals).</p>
Ear shape	<p>Cheetahs have rounded ears. <i>Note:</i> the ears can become misshapen during the tanning and drying process</p>	<p>Pointy ears similar to a goat or dog</p>
Shape of the spots	<p>Spots irregularly spaced across skin – some close together others further apart. Different sized spots – some very small, others quite large Spots are not perfectly round Spots on the tail may converge into stripes at the tip of the tail</p> 	<p>Spots are very regular – both in distribution across the skin and also in size and shape Spots on the tail look very similar to those on the rest of the skin</p> 

<p>Appearance of the hairs in the spots</p>	<p>Each hair is the same colour along its shaft – they don't change from yellow to black halfway along the shaft</p> 	<p>Hairs change colour along their shaft, as if one end has been coloured with paint/dye or burnt</p> 
<p>Appearance of fur</p>	<p>There will be a layer of straight guard hairs which entirely cover a layer of fluffy underfur.</p>  <p>Cheetahs have a fur density of 2000 per sq cm; an underfur to guard hair ratio of 6; guard hair length: ~35mm; underfur length: ~25mm.</p>	
<p>Head</p>	<p>Spots on the head are much smaller than those on the rest of the body Spots not uniformly distributed across head – most spots on forehead and cheeks, very few on chin Teardrop mark between inner corner of the eye and the outer corner of the mouth</p> 	<p>Spots uniform in size and distributed evenly across whole head Teardrop mark may be missing If a skull is present, the skin may appear not to fit it properly.</p>

Example of a goat skin made to look like a cheetah skin:

Note that:

- The spots are very regular and are all almost the same size across the entire skin
- There is no head or tail
- The spots appear to have been burnt or painted on



10. Cat Skins

Below are pictures of real cheetah skins with some of the variations that might be seen. In subsequent sections there are pictures of some of the cat species which could be confused with cheetahs due to some similarities in their appearances. Pictures have scale bars visible – each black or white square is 1cm x 1 cm.

10.1. Adult Cheetahs

No whorls in fur – hair lies flat and (broadly) all in the same direction.

Tail is long, and when turned back along the length of the body, it reaches to approximately the point where the skin of the front legs begins



NHМУK specimen 1939.1686



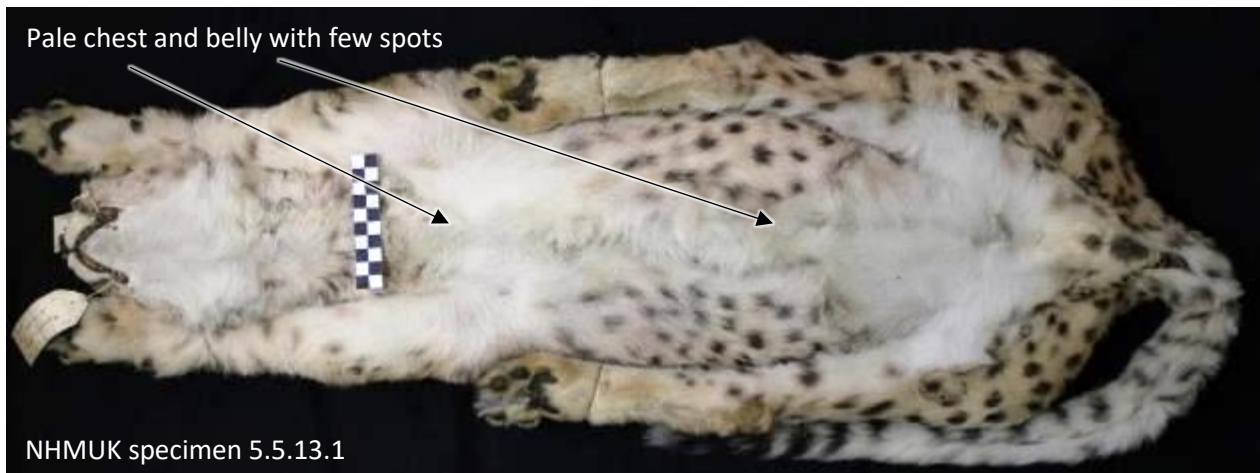
Rounded ears with black band at base



Irregularly spaced and sized spots with few on belly

Pale yellow/tawny colour fur fading to white at belly

NHМУK specimen 84.1848



Pale chest and belly with few spots

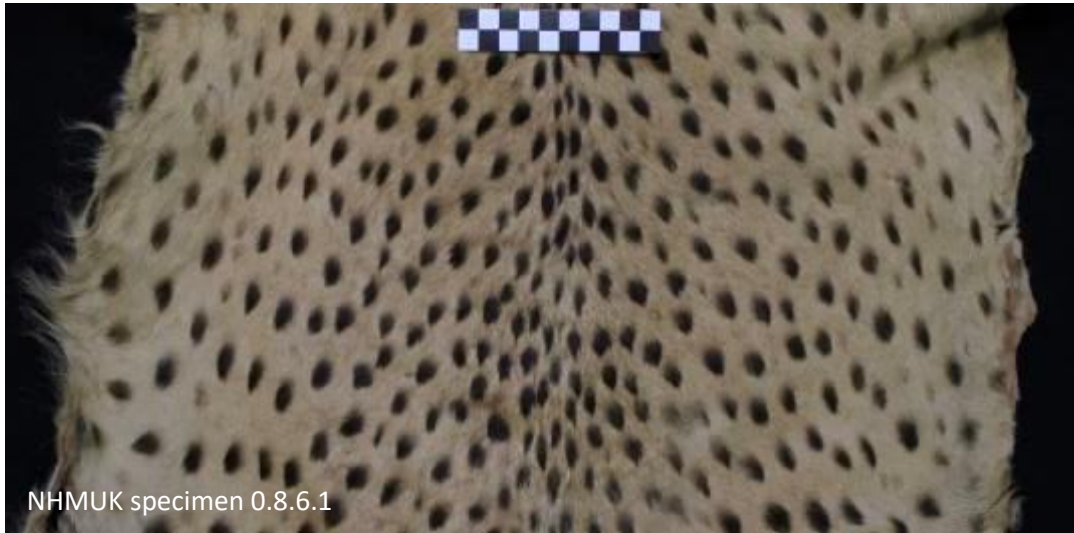
NHМУK specimen 5.5.13.1



Long tail

NHМУK specimen 84.1848

10.2. Adult Cheetahs – Variations



Unusually small spots



King cheetah – wide, blunt ended stripes rather than just spots



Very rare colour morph with relatively few, extremely small spots.

Note for all of these skins, although there are variations in the spot patterns, in other aspects, such as the teardrop mark, ear shape etc they are there same as other cheetahs are consistent identifying features

10.3. Cheetah Cubs





Cheetah cubs have longer hair, therefore their spots are less distinct than adult cheetahs. However, they still have other defining features such as the teardrop mark so look carefully for these signs.

10.4. Cat Skins Which Could be Confused with Cheetahs

10.4.a. Asiatic Wildcat

Felis silvestris ornata / *Felis lybica ornata*

CITES Appendix: II

IUCN Red List: Least Concern

Size: Small cat – adult head-body length approx. 40-65cm

Retractable claws: Yes

Tear marks on face: No

Whisker spots: Yes – dark and distinct

Whorls in fur: No – hair lies flat and (broadly) all in the same direction.

Tail: Dark bands at end. Long, and when turned back along the length of the body, it reaches to approximately the point where the skin of the front legs begins



10.4.b. Black-Footed Cat

Felis nigripes

CITES Appendix: I

IUCN Red List: Vulnerable

Size: Small cat – adult head-body length approx. 40-65cm

Retractable claws: Yes

Tear marks on face: No

Whisker spots: Yes – dark and distinct

Whorls in fur: No - hair lies flat and (broadly) all in the same direction

Tail: Quite short, and when turned back along the length of the body, it reaches to approximately the mid-back



10.4.c. *Geoffroy's Cat*

Leopardus geoffroyi

CITES Appendix: I

IUCN Red List: Least Concern

Size: Small to medium sized cat – adult head-body length approx. 45-90cm

Retractable claws: Yes

Tear marks on face: Yes - reaching to first line of whisker spots.

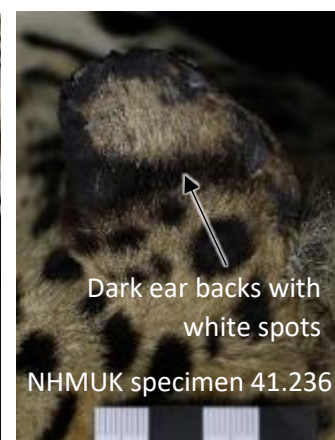
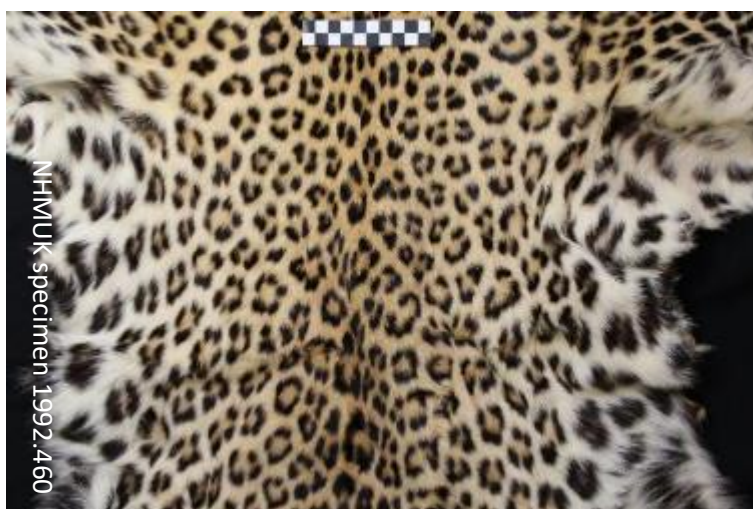
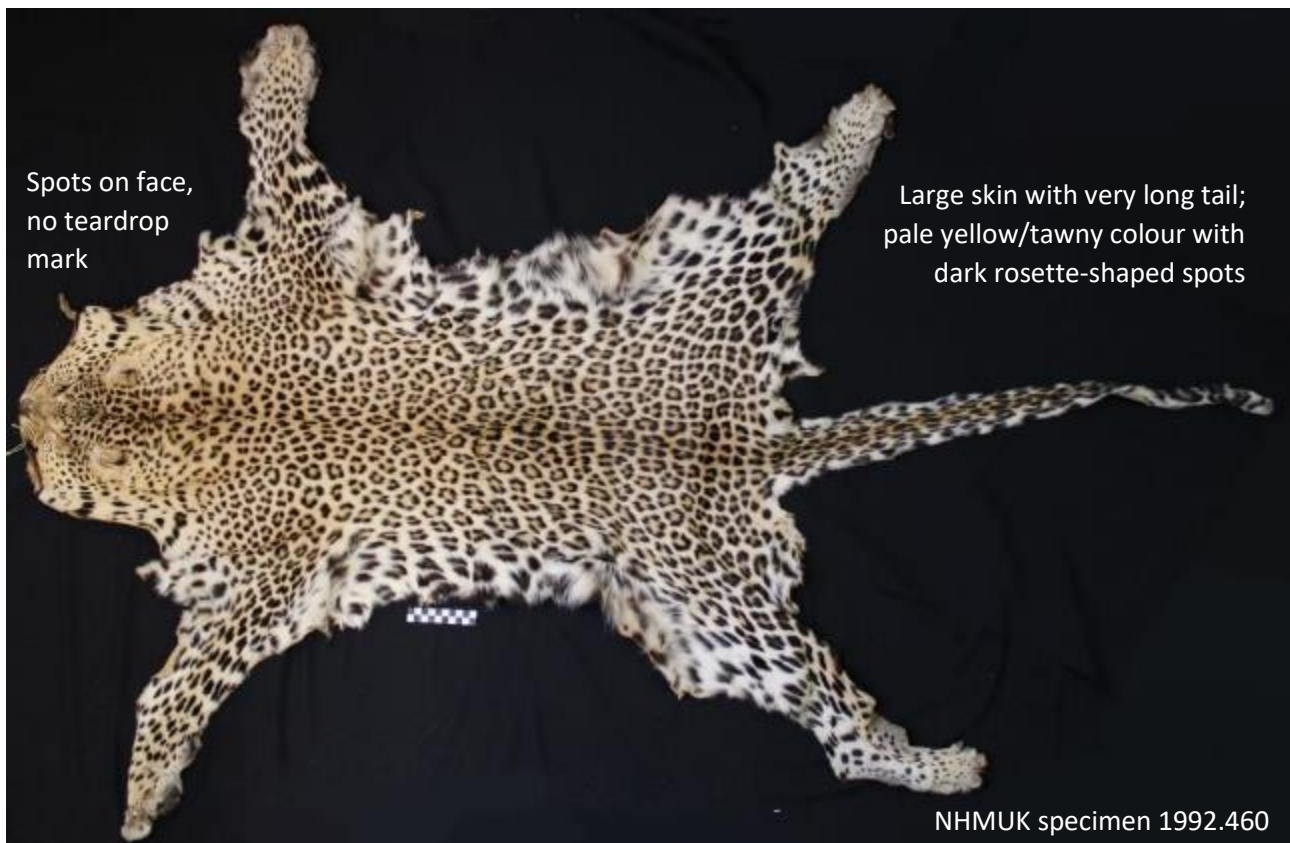
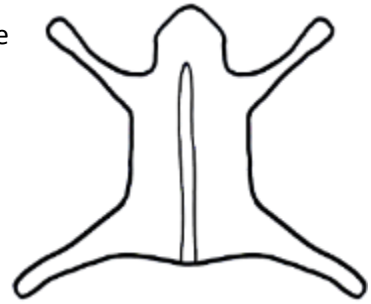
Whisker spots: Yes - dark and distinct

Whorls in fur: Whorls in fur on top of head, close to the ears.

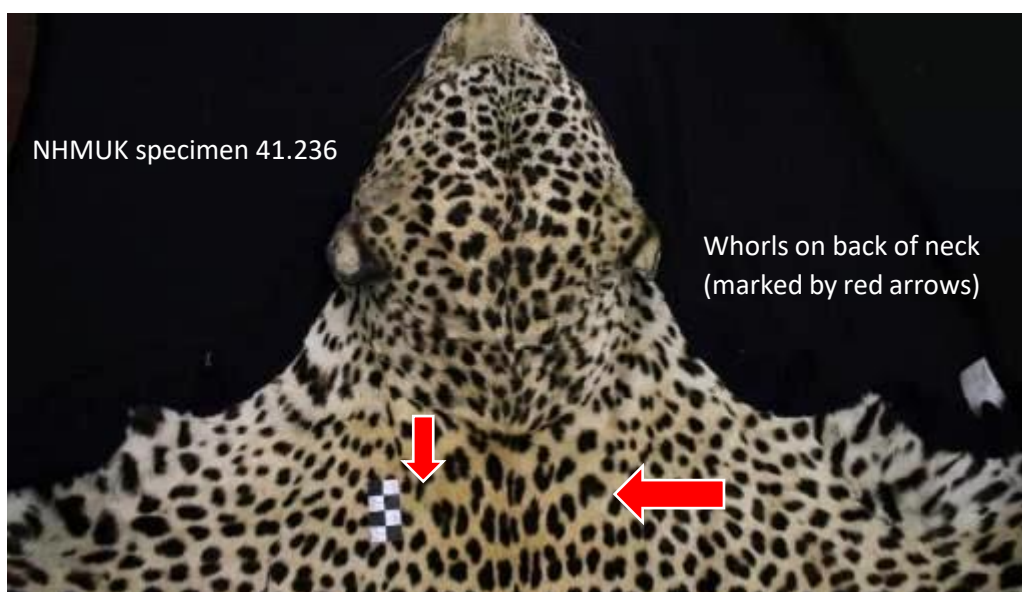
Tail: Long, and when turned back along the length of the body, it reaches to approximately the shoulders



10.4.d. *Guiña**Leopardus guigna***CITES Appendix:** II**IUCN Red List:** Vulnerable**Size:** Small cat – adult head-body length approx. 35-55cm**Retractable claws:** Yes**Tear marks on face:** Yes – short tear marks and stripes on forehead above eyes**Whisker spots:** Yes – dark and distinct**Whorls in fur:** No - hair lies flat and (broadly) all in the same direction**Tail:** Long and thick, and when turned back along the length of the body, it reaches to approximately the point where the skin of the front legs begins

10.4.e. Leopard*Panthera pardus***CITES Appendix:** I**IUCN Red List:** Vulnerable**Size:** Large cat – adult head-body length approx. 90-190cm**Retractable claws:** Yes**Tear marks on face:** No**Whisker spots:** Yes – dark and distinct**Whorls in fur:** Yes - at base of neck (see below)**Tail:** Very long, and when turned back along the length of the body, it reaches to the base of the neck

Rosette shaped spots



10.4.f. Margay

Leopardus wiedii

CITES Appendix: I

IUCN Red List: Near Threatened

Size: Small cat – adult head-body length approx. 45-70cm

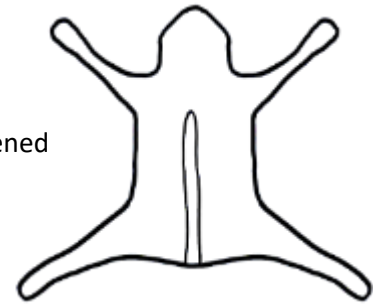
Retractable claws: Yes

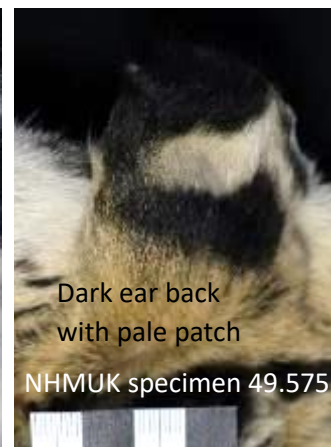
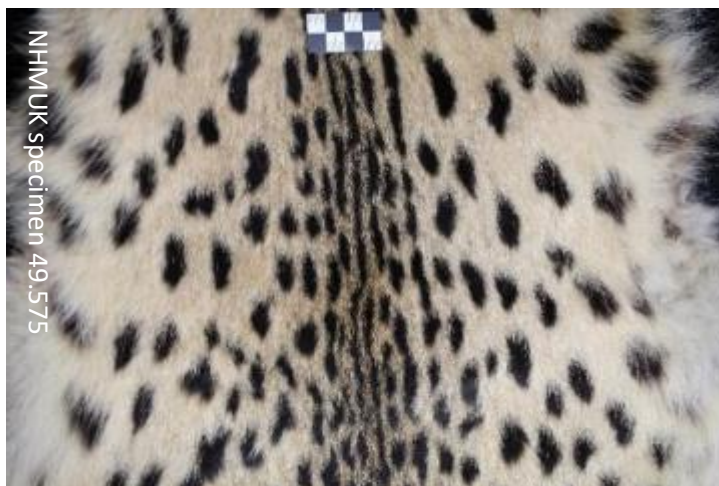
Tear marks on face: Yes – faint marks

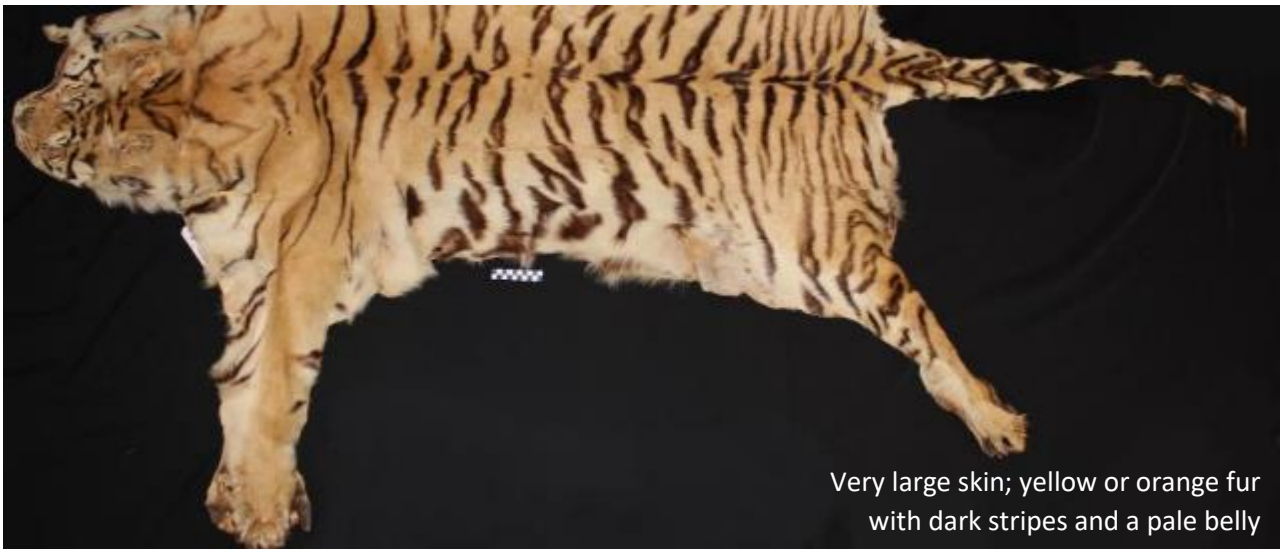
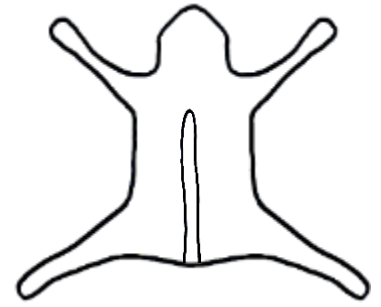
Whisker spots: Yes – dark and distinct

Whorls in fur: Yes – indistinct whorls on shoulders

Tail: Long, and when turned back along the length of the body, it reaches to approximately the point where the skin of the front legs begins

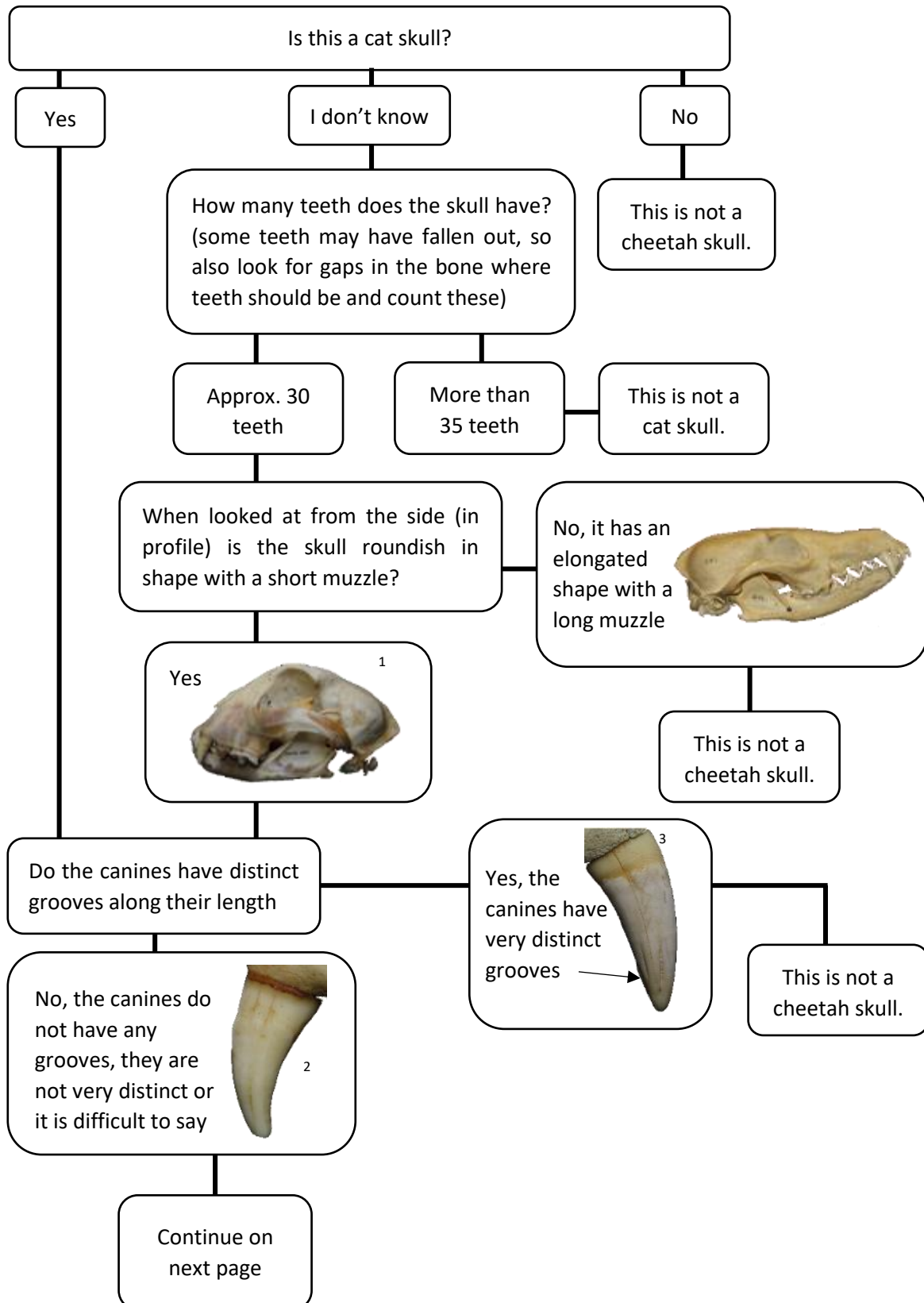


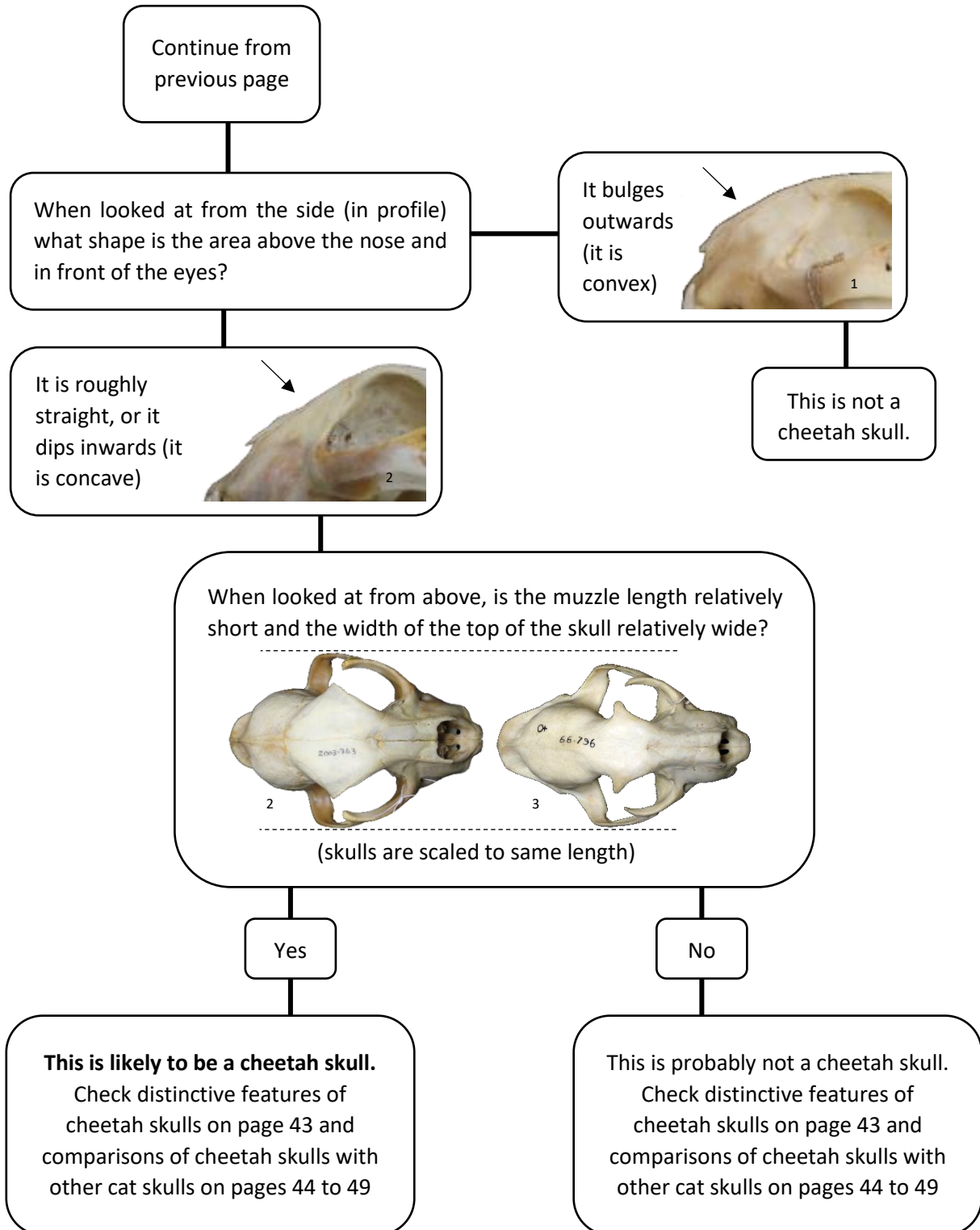
10.4.g. Serval*Leptailurus serval* / *Caracal serval***CITES Appendix:** II**IUCN Red List:** Least Concern**Size:** Small to medium sized cat – adult head-body length approx. 60-100cm**Retractable claws:** Yes**Tear marks on face:** Yes – but very faint**Whisker spots:** Yes – but indistinct**Whorls in fur:** No - hair lies flat and (broadly) all in the same direction**Tail:** Quite short, and when turned back along the length of the body, it reaches to approximately the mid-back

10.4.h. Tiger*Panthera tigris***CITES Appendix:** I**IUCN Red List:** Endangered**Size:** Very large cat – adult head-body length approx. 150-230cm**Retractable claws:** Yes**Tear marks on face:** No**Whisker spots:** Yes – dark spots blurring into lines**Whorls in fur:** No – hair lies flat and (broadly) all in the same direction**Tail:** Medium length, and when turned back along the length of the body, it reaches to approximately the upper back

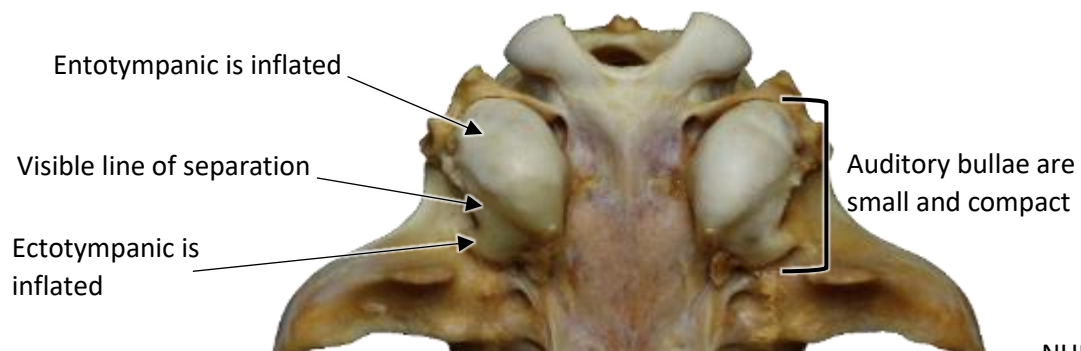
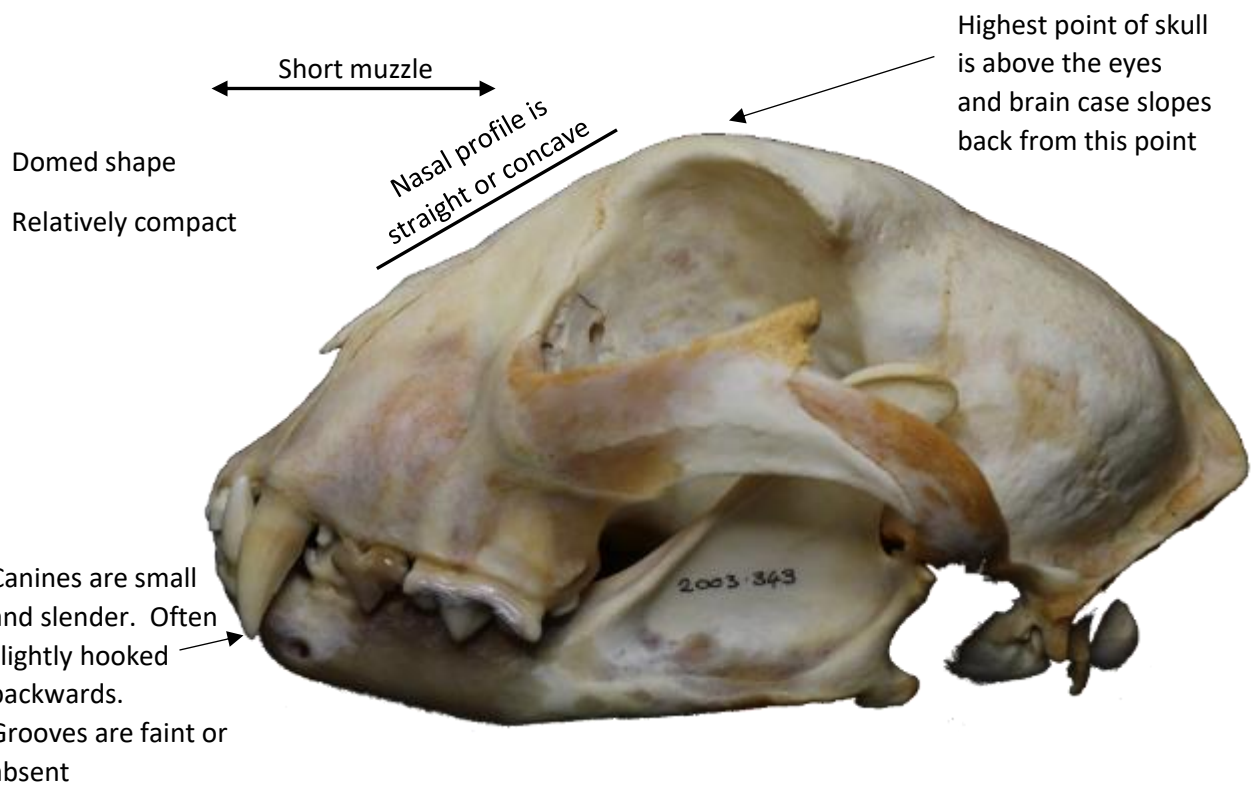
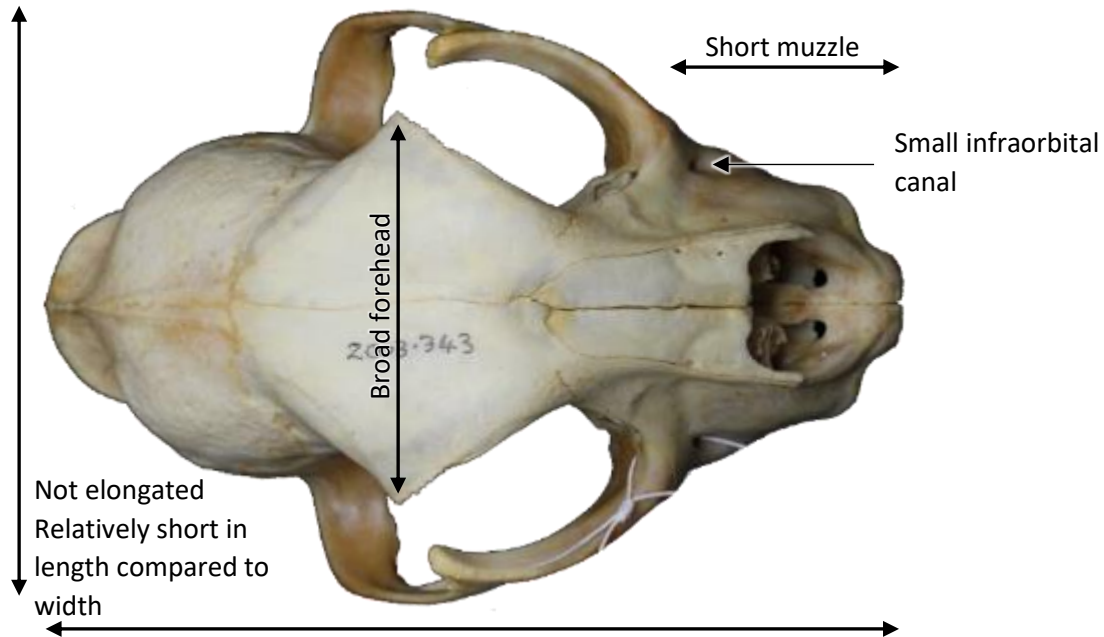
11. Skulls

11.1. Cheetah Skulls Identification Key

¹ NHMUK 2003.343² NHMUK 31.1.3.3³ NHMUK 1938.10.18.7

¹ NHMUK 66.794² NHMUK 2003.343³ NHMUK 66.343

11.2. Cheetah Skulls – Distinctive Features



NHMUK 2003.343

11.3. Comparison of Cheetah Skulls with Other Cat Species

11.3.a. Lateral view (from the side)

Cheetah skulls are more domed than those of other cats, with a very short muzzle and a straight to concave nasal profile. Highest point of the cheetah skull is above the eyes.



Cheetah (NHMUK specimen 2003.343)



Caracal (NHMUK specimen 26.12.7.32)



Lion (NHMUK specimen 1938.10.18.7)



Jaguar (NHMUK specimen 1936.5.26.3)



Puma (NHMUK specimen 1903.7.9.83)



Leopard (NHMUK specimen 58.236)



Serval (NHMUK specimen 66.794)

11.3.b. Dorsal view (from above)

Cheetah skulls have broad foreheads and are relatively wide compared to their length

Black arrows show width of forehead compared to the length of the skull



Cheetah (NHMUK specimen 2003.343)



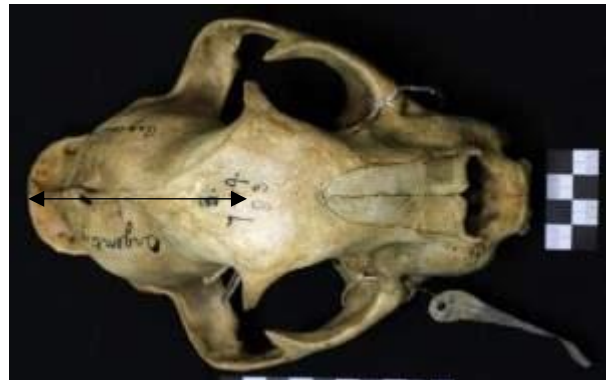
Caracal (NHMUK specimen 86.690)



Lion (NHMUK specimen 1938.10.18.7)



Jaguar (NHMUK specimen 1936.5.26.3)



Puma (NHMUK specimen 1903.7.9.83)



Leopard (NHMUK specimen 58.236)



Serval (NHMUK specimen 66.794)

11.3.c. Ventral view (under side)



Cheetah (NHMUK specimen 2003.343)



Caracal (NHMUK specimen 86.690)



Lion (NHMUK specimen 1938.10.18.7)



Jaguar (NHMUK specimen 1936.5.26.3)



Puma (NHMUK specimen 1903.7.9.83)

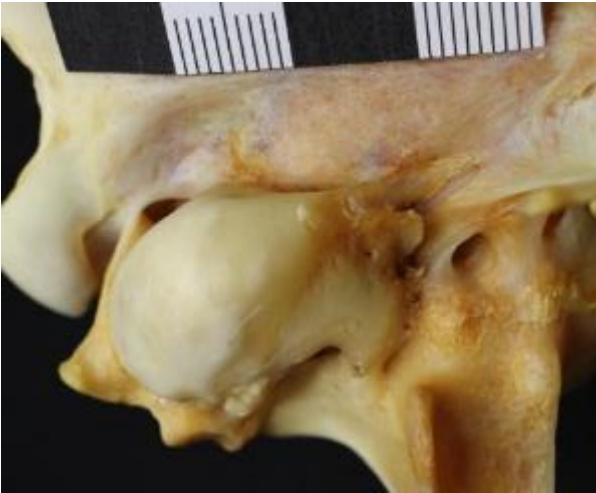


Leopard (NHMUK specimen 66.796)



Serval (NHMUK specimen 66.794)

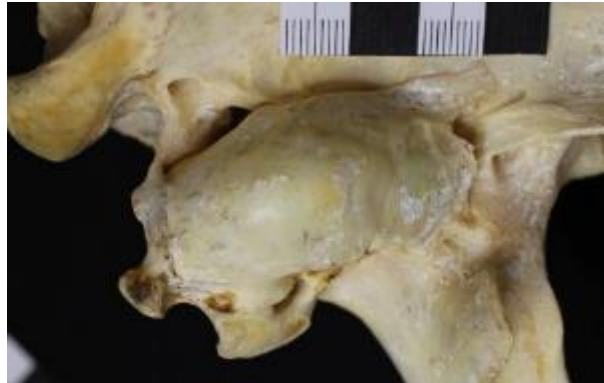
11.3.d. Auditory bullae



Cheetah (NHMUK specimen 2003.343)



Caracal (NHMUK specimen 86.690)



Lion (NHMUK specimen 1938.10.18.7)



Jaguar (NHMUK specimen 1936.5.26.3)



Puma (NHMUK specimen 1903.7.9.83)



Leopard (NHMUK specimen 66.796)



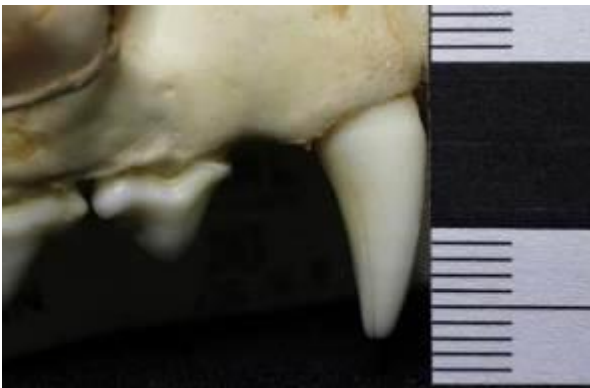
Serval (NHMUK specimen 66.794)

11.3.e. *Canines*

Cheetahs' canines usually only have very faint grooves, or none at all. Some other cat species have very distinct grooves on their canines



Cheetah (NHMUK specimen 2003.343)



Caracal (NHMUK specimen 86.690)



Lion (NHMUK specimen 1938.10.18.7)



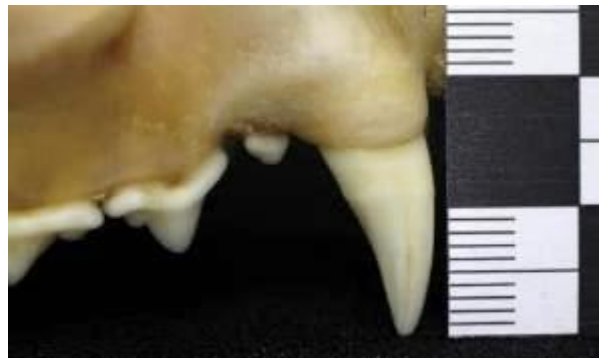
Jaguar (NHMUK specimen 1936.5.26.3)



Puma (NHMUK specimen 1917.1.25.70)



Leopard (NHMUK specimen 66.796)



Serval (NHMUK specimen 66.794)

11.3.f. *Infraorbital canals*

Cheetahs have very small infraorbital canals compared to other cat species



Cheetah (NHMUK specimen 2003.343)



Caracal (NHMUK specimen 26.12.7.32)



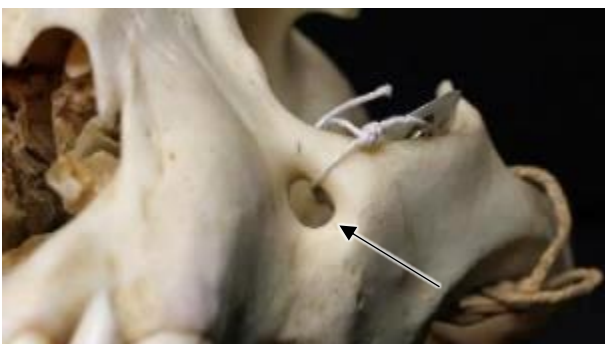
Lion (NHMUK specimen 1938.10.18.7)



Jaguar (NHMUK specimen 1936.5. 26.3)



Puma (NHMUK specimen 1903.7.9.83)



Leopard (NHMUK specimen 66.796)



Serval (NHMUK specimen 66.794)

12. Skeletons

Cheetahs have highly specialised skeletons which enable them to run incredibly fast. Below are some photographs of a cheetah skeleton, however it is not always easy to determine which species a cat skeleton has come from. If there is any doubt over whether a skeleton belongs to a cheetah (especially if it is suspected of coming from another big cat) then DNA samples should be taken, as described in Section: *DNA Sampling Guidelines*

Scapula (shoulder blade)



Upper spine / vertebrae (backbone)



Lower spine / vertebrae (backbone)



Femur (thigh bone)



Foot



All photographs on this page are
NHMUK specimen 1883.4.14.1

13. Further Reading

Kitchener AC, Van Valkenburgh B, Yamaguchi N. *Felid form and function*. Biology and conservation of wild felids. 2010: pp83-106.

Sims ME. Cranial morphology of five felids: *Acinonyx jubatus*, *Panthera onca*, *Panthera pardus*, *Puma concolor*, *Uncia uncia*. Russian Journal of Theriology. 2012;11(2):157-70.

Sims, M.E. 2005. Identification of Mid-size Cat Skulls. Identification Guides for Wildlife Law Enforcement No. 7. USFWS, National Fish and Wildlife Forensics Laboratory, Ashland, OR.

Note: to help with the identification of some big cat species, an Asian big cat field pocket guide is also available through CITES. For more information on obtaining a copy of the field guide, see Notification to the Parties No. 2018/014 <https://cites.org/sites/default/files/notif/E-Notif-2018-014.pdf>